REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1-22 are presently active, and Claims 8-13 and 18-22 are amended. No new matter is added.

In the outstanding Office Action, the drawings were objected to for not having a legend such as "Prior Art"; and Claims 1-22 were rejected under 35 U.S.C. § 103(a) as unpatentable over Ninomiya et al. (U.S. Patent No. 5,981,085).

Regarding the objection to the drawings, on the replacement sheets, Figures 2-3 are labeled with – Prior Art –. Thus, it is respectfully submitted that the objection to the drawings is overcome.

Regarding the rejection of Claims 1-22, Applicants respectfully traverse the outstanding grounds for rejection, because in Applicants' view, a *prima facie* case of obviousness has not been established.

The Office Action acknowledges that Ninomiya et al. fails to teach a Cu circuitry layer of at least 99.999% purity (Office Action, at page 3, line 2). Thereafter, the Office Action asserts that "it is merely a matter of choice in selecting a particular copper depending on a specific application and a selection of the best suitable material involves only routine skill in the art" (Office Action, at page 3, lines 5-7). However, there is no description in Ninomiya et al. as to internal stress accumulated in a Cu circuitry layer, while the inventions recited in Claims 1, 2 and 4 recite a Cu circuitry layer of at least 99.999% purity to reduce the internal stress accumulated in a Cu circuitry layer and to satisfy requirements for both a long life toward heat cycle and satisfactory thermal conductivity. Although the outstanding Office Action asserts that it is within the routine skill in the art to select the best suitable material, ***only*** the Applicants' specification provides a motivation to reduce the accumulation of

internal stress in order to extend a life of the substrates toward heat cycle (for example, Specification at page 2, lines 5-10 and 15-18). Namely, the outstanding Office Action's assertion that "it is merely a matter of choice in selecting a particular copper depending on a specific application" comes without any particularized motivation to reduce the accumulation of internal stress in order to extend a life of the substrates toward heat cycle. M.P.E.P. § 2143 requires to establish a *prima facie* case of obviousness that there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Thus, a *prima facie* case of obviousness has not been established.

Accordingly, independent Claims 1, 2 and 4 patentably distinguish over Ninomiya et al. Therefore, Claims 1, 2 and 4 and the pending Claims 3 and 5-22 dependent from Claims 1, 2 and 4 are believed to be allowable.

Further, regarding Claims 8-10, Applicants note that Claims 8-10 are amended to clarify the structures of the claimed subject matters and Ninomiya et al. fails to teach or suggest that "the circuitry layer and the metal layer are composed of the copper, which release stress within 24 hours at 100°C," as recited in Claims 8-10.

Regarding Claims 11-13, Applicants note that Claims 11-13 are amended to clarify the claimed subject matters. According to Table 3 of the specification, elongation percentages of 4N Cu (of 99.99 % purity) are 12, 13, 15 and 17%, while those of 5N Cu (of 99.999% purity) and 6N Cu (of 99.9999% purity) are from 20 to 30 %. In the case of an elongation percentage of 20% to 30%, defects such as cracking of the insulating substrate or separation between the circuitry layer and the insulating substrate can be reduced (for example, Specification at page 11, lines 15-18), which is an unexpected result relative to Ninomiya et al. Therefore, Ninomiya et al. fails to teach or suggest that "the circuitry layer

and the metal layer are composed of the copper, elongation during rupture of which is from 20% to 30% within the range of -40°C to 150°C," as recited in Claims 11-13.

Regarding Claims 20-22, Applicants note that, in the case of an average particle diameter of crystalline particles of 1.0 mm or more for N5 Cu and N6 Cu, defects such as cracking of the insulating substrate or separation between the circuitry layer and the insulating substrate can be reduced (for example, Specification at page 13, lines 15-17 and Table 3), which is an unexpected result relative to Ninomiya et al. Accordingly, Ninomiya et al. fails to teach or suggest that "the average particle diameter of crystalline particles of the circuitry layer and the metal layer is from 1.0 mm to 30 mm," as recited in Claims 20-22.

Consequently, in view of the present amendment and in light of the above discussions, it is believed that the outstanding rejection has been overcome, and the application as amended herewith is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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IN THE DRAWINGS

The attached sheets of drawings include changes to Figs. 2-3. These sheets, which include Figs. 2-3, replace the original sheets including Figs. 2-3.

Attachment: Replacement Sheets